Watershed Assessments for Little Cayuse Creek, Near Castlegar, BC

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The Investigation

The Forest Practices Board (the Board) received a complaint about two cutblocks in the Little Cayuse Creek watershed near Castlegar, BC. The cutblocks were proposed by Pope and Talbot Ltd., Arrow Lakes Division (the licensee) and approved by the Ministry of Forests, Arrow Forest District (MoF). The complainant asserted that:

1. The results of an Interior Watershed Assessment Procedure (IWAP) level 1 analysis for the Little Cayuse Creek watershed required further assessments before logging the cutblocks, and that this requirement was not met.

2. The Ministry of Forests should not have approved the cutblocks prior to the licensee completing further assessments and amending operational plans to incorporate results of those assessments.

3. Future logging of the watershed is likely to be inappropriate unless the decision to approve the cutblocks is examined.

The cutblocks in question are Block 1 and Block 2 of cutting permit (CP) 355, Tree Farm Licence (TFL) 23.

The complainant was concerned that logging operations in the Little Cayuse Creek watershed would adversely affect the water quality of the creek. The complainant is a licensed water user. He needs a clear, consistent source of water for domestic consumption, to irrigate crops, and to generate electricity. The complainant asked the Board to defer logging of the cutblocks until further analysis could be completed and operational plans amended to incorporate the recommendations of the analysis. The Board may make recommendations, but cannot reverse decisions. Furthermore, the licensee had already started logging Block 1 prior to the initiation of the investigation. The complainant nevertheless asked the Board to investigate.

The investigation examined:

a) **Compliance:** Did the licensee's preparation and MoF's approval of operational plans for TFL 23 CP 355 comply with the requirements of the *Forest Practices Code of British Columbia Act* and related regulations (the Code) for watershed assessments?

b) **Reasonableness of decisions:** Was MoF's decision to approve the operational plans consistent with sound forest practices and was it based on an adequate assessment of available information?

c) **Fairness of processes:** Did MoF use fair processes in making the decision to approve the operational plans?

For the above, operational plans included the silviculture prescriptions (SPs) for Blocks 1 and 2 and the 1997-2001 Forest Development Plan (FDP).

The last two questions examine discretionary decisions made under the Code. The Board considers these questions in the context of general public expectations about how decisions are made under the Code.

The Board added the Ministry of Environment, Lands, and Parks, Kootenay Region (MELP), as a party to the investigation as the ministry provided advice to MoF regarding the approval of the operational plans.

Watershed Assessment Procedures

A watershed assessment procedure (WAP) is a tool to help forest managers understand the type and extent of current water-related problems that exist in a watershed. The procedure recognizes the possible implications for hydrology of proposed logging and road building. The Interior Watershed Assessment Procedure (IWAP) is used in the interior of BC. The *Interior Watershed Assessment Procedure Guidebook* (the guidebook) states that:

> "From the results of a WAP, recommendations can be made, aimed at preventing or mitigating the impacts of forestry-related activities in the watershed. The recommendations may call for such actions as modifying future harvest layout or scheduling, recognizing sensitive zones, or adopting specific practices in the watershed."

An IWAP can involve three levels of analysis:

Level 1: A reconnaissance-level analysis, based on the examination of aerial photographs and maps. A level 1 analysis identifies whether the cumulative effects of past forest harvesting or planned future forest harvesting have or will impact watersheds.

Level 2: (Channel Assessment Procedure, or CAP): An overview assessment of stream channels performed by someone with basic experience in hydrology and/or geomorphology.

Level 3: A very detailed analysis performed by a watershed specialist whose work is guided by the results of a level 1 and level 2 analysis.

Each level becomes increasingly more detailed and field oriented. The level 1 and level 2 procedures are described in guidebooks. No guidebook exists for the level 3 procedure.

Depending on the results of the level 1 portion of the assessment, the guidebook might indicate that a level 2 analysis is needed to complete the assessment and develop recommendations for the watershed. These recommendations are normally subject to review by a "roundtable" consisting of representatives from different interest groups. The roundtable typically provides the district manager with recommendations that will maintain or improve water quality and quantity. Recommendations may constrain future logging and/or require an even more detailed assessment. Appendix 1 shows the linkages between the various levels of a watershed assessment procedure.

The Little Cayuse Watershed and History

The Little Cayuse Creek watershed covers 2650 hectares and is approximately 10 kilometers northeast of Castlegar. It drains into Lower Arrow Lake.

Columbia Cellulose began large scale, commercial logging of the watershed in the 1960's, which was continued by Westar Timber Ltd. after the transfer of TFL 23 in 1975. Compared to today's standards, the rate of cut was high and forest practices were poor, with logging machinery operating in and through creeks. The effects of this are still apparent today. The participants of this complaint are dealing with a legacy from past poor logging practices.

Mountain pine beetle was first noted in the area in 1989. MoF instructed Westar Timber to address mountain pine beetle infestations in the Big Cayuse and Little Cayuse Creek watersheds in 1991. Residents formed the Cayuse Creek Watershed Committee (the residents' committee) to voice their concerns about the impact of proposed logging on watershed values. Pope and Talbot Ltd. assumed management of TFL 23 in 1991 and formed the Cayuse Creeks Technical Committee (the technical committee) to provide a forum for representatives of the residents' committee, the licensee, MoF, MELP and Ministry of Health to meet and discuss specific watershed concerns.

In 1992, the licensee included CP 359 in its 1992-1996 Forest Development Plan (FDP). In 1993, the licensee included CP 355 in its 1993-1997 FDP. CP 355 was introduced to the residents' committee and the public at that time. CP 355 covered over 400 hectares in the Little Cayuse Creek and Big Cayuse Creek watersheds and was scheduled for logging in 1997. Of this area, approximately 300 hectares were located within the Little Cayuse Creek watershed, consisting of three complete cutblocks and a portion of a fourth cutblock. MoF considered the general intent and potential impacts of CP 355 at this time.

Early in 1993, MoF approved CP 359 for logging in the Little Cayuse Creek watershed. Later that year, a slump occurred in the Little Cayuse Creek watershed and the resulting sediment affected the intakes of local water users. The residents' committee expressed their concerns about the slide to the technical committee. The resident's committee asserted that the slide was caused by excessive runoff from a clear-cut, exacerbated by poor road and culvert maintenance.

The district manager (of that time) requested that the Nelson Forest Region examine the watershed. He put further logging on hold, including CP 359, until the study was completed. The Nelson Forest Region completed the review in August 1993 and submitted a report, which included over 40 recommendations to the district. The district manager instructed the licensee that no more logging was to occur in the watershed until the recommendations of the report were implemented to his satisfaction.

From 1994 to 1996, the licensee completed a number of studies to implement the recommendations of the review by Nelson Forest Region. These included a road deactivation and maintenance plan, mapping of terrain stability hazards, and channel stability evaluations. The licensee began deactivating roads in July 1994, and permanently or semi-permanently deactivated 42 kilometers of roads in the Little Cayuse Creek watershed

between 1994 and 1998. CP 359 was harvested in 1995 after further discussion at technical committee meetings. At that time, the licensee had not implemented all of the recommendations of the review by Nelson Forest Region.

By 1996, the licensee had reduced the planned logging of CP 355 to two blocks covering a total area of 86 hectares, located entirely within the Little Cayuse Creek watershed. The licensee completed layout and engineering of the blocks by October 1996. MoF and MELP (Fish and Wildlife Branch) undertook a field review of CP 355 and did not note any significant concerns. In January 1997, the final block and road configurations for CP 355 were shown in the 1997-2001 FDP and details were presented to the technical committee. The residents' committee opposed logging, expressing specific concerns regarding the building of more roads, clear-cut logging and sediment delivery into streams from previous and future logging activities.

In November 1996 the licensee, on its own initiative, had begun an IWAP level 1 analysis. The analysis was undertaken to plan future watershed restoration work for funding by Forest Renewal British Columbia (FRBC). The IWAP level 1 was finalized by March 1997, about the same time the licensee submitted CP 355 to the Arrow Forest District for approval. The complainant sent a letter to MoF in March 1997 expressing concern that logging of the two blocks in CP 355 would increase peak flow and the risk of surface erosion. The complainant stated that the high IWAP level 1 scores indicated that a level 2 or 3 assessment would be required before logging was approved.

In April 1997, two separate slope failures occurred in the Little Cayuse Creek watershed. A geotechnical study concluded that high meltwater and heavy precipitation caused the slides. Diversion of excess drainage along an old skid trail was also a contributing factor.

In April 1997, MELP reviewed the CP 355 proposal and sent a letter to MoF indicating that it did not oppose approval of the development, but that it expected that any additional logging after CP 355 would be preceded by further study. The district manager met with the complainant on June 11, 1997 to discuss concerns and, later that day, approved the 1997 - 2001 FDP for a two-year term. The ministry approved the silviculture prescriptions and cutting permits for CP 355 on June 26, 1997. The licensee immediately began building access roads.

At a June 1997 meeting of the technical committee, the complainant stated that MoF should not have approved CP 355 without further study. The complainant and district manager met again in August to discuss concerns. The complainant was not satisfied with the outcome and sent letters to the district manager in September and October 1997, expressing concerns and requesting clarification of the rationale for approving CP 355. The complainant was not satisfied with the response and filed a complaint with the Board in November. The licensee started logging Block 1 in January 1998.

Investigation Findings

Compliance with the Code

The complainant asserted that watershed assessments were not completed as required. Consequently, the first issue of the investigation is whether the development and approval of operational plans complied with the Code requirements for watershed assessments.

Section 41 of *Forest Practices Code of British Columbia Act* (the Act) states that the district manager may approve an operational plan only if plans are prepared in accordance with the requirements of the Code. The specific requirement for watershed assessments is provided by Section 32(1) of the *Operational Planning Regulation*[1]. It states that a watershed assessment is required for the following types of watersheds prior to carrying out logging or road construction under a forest development plan:

a) a community watershed;

b) a watershed that has significant downstream fisheries or domestic water values and significant watershed sensitivity as determined by the district manager and a designated environment official;

c) a watershed for which the district manager determines an assessment is necessary.

Watershed assessments are normally required for community watersheds, but elsewhere the district manager can decide whether or not to require a watershed assessment. The Little Cayuse Creek drainage is not designated as a community watershed, and the district manager decided not to require a watershed assessment there. Nevertheless, the licensee did complete an IWAP level 1 analysis to acquire funding for stream channel restoration and fish and riparian habitat rehabilitation work.

Finding 1:

Although a watershed assessment for Little Cayuse Creek was completed for other purposes, it was not required under the Code.

Section 41 of the Act also requires the district manager be satisfied that the plans will adequately manage and conserve the forest resources (which includes water resources). This means that operational plans must adequately manage and conserve forest resources and the district manager must be satisfied that this requirement has been met. In order to make such an evaluation, the district manager must have considered sufficient relevant information.

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1 Note that the *Operational Planning Regulation* in force when the circumstances of this complaint occurred was replaced by a new *Operational Planning Regulation* in June, 1998. Similar provisions are now found in section 14 of the replacement regulation.

Relevant information considered by the district manager in the circumstances of this complaint included:

- hydrological studies that provided recommendations on future development in the watershed, including the IWAP level 1 analysis, a report by the Nelson Forest Region and a report by a hydrologist hired by the residents' group;
- assessments that identified potential hazards for future development, such as susceptibility to landslides and erosion;
- a report that identified the cause of a recent landslide in the Little Cayuse Creek watershed;
- actions taken by the licensee to address recommendations and hazards identified by assessments, including road maintenance and deactivation, mapping of surface sources of water, and other actions identified in the operational plans; and
- recommendations and concerns provided to the district manager by MELP, MoF staff and the residents' committee.

Based on his review of this information, the district manager was satisfied that the operational plans for CP 355 would adequately manage and conserve the forest resource. The Board found that the information he considered was sufficient to reach this conclusion.

Finding 2:

The district manager's approval of the operational plans for CP 355 complied with the Code requirement that he be satisfied that the plans adequately manage and conserve the forest resources (including water resources).

Evaluation of the District Manager's Decision

When a complaint concerns the exercise of discretion by a statutory decision-maker under the Code, the Board generally chooses to comment on the exercise of that discretion. The Code gives decision-makers discretion to make decisions. The Board reviews these decisions to help ensure that resources are managed and conserved in the public's interest under the Code. The standard the Board uses in evaluating discretionary decisions is not whether the decision was the best decision. It is:

> "Was the decision consistent with sound forest practices, did it achieve the intent of the Code and was it based on an adequate assessment of available information?"

The Board considers additional factors in the context of general public expectations about how decisions are made under the Code. In reporting its conclusions, the Board uses the ordinary meaning of terms like "reasonable," "appropriate," "adequate" and "fair."

In the circumstances of this complaint, the district manager had the authority to require a watershed assessment prior to approving operational plans for Little Cayuse Creek; he decided not to require one. The Board examined whether that decision was reasonable. In other words, the issue was whether the decision to approve operational plans relating to CP 355 without requiring further assessments could reasonably be expected to adequately manage and conserve the forest resource.

The complainant maintains that the watershed required further study and that approval of the development was inappropriate. This implies that the approval of CP 355 did not adequately manage and conserve the water resource. Therefore, the investigation considered two related issues:

1. **Was existing information adequate?** Was it reasonable to review the proposed logging of CP 355 based on existing information without undertaking further assessments?

2. **What does the existing information indicate?** Does existing information suggest that the approval of the logging of CP 355 could adequately manage and conserve the forest resource?

To answer these questions, the Board reviewed a number of factors relevant to the approval decision:

- the current level of development in the watershed;
- the results of the watershed assessment procedure;
- other assessments and reviews ;
- measures to mitigate the impact of logging;
- other considerations;
- recommendations from MELP; and
- the potential benefit of further study.

Factor #1 - Level of Development in the Watershed

The watershed has been affected by both the amount of logging and by poor operating practices in the past (where logs were skidded out along the lower reaches of Little Cayuse Creek in the 1960's and 1970's). However, participants disagree about how much additional logging the watershed can sustain without causing undue impact on water resource values. The complainant believes that the acceptable level for development for the watershed has already been exceeded. MoF considers that the watershed is approaching its current

threshold for development; the district manager has stated that he will not consider further logging after CP 355 at this time. The licensee believes that the watershed can sustain additional development after CP 355 without undue effects on water resource values.

While the investigation did not attempt to determine an appropriate level of development, the Board concludes that any decision to allow additional development in the watershed must be cautiously done and must fully consider the potential impacts on resource values.

Finding 3:

The Little Cayuse Creek watershed has been impacted by past logging practices. Approval of additional logging should be approached with caution and carefully consider the potential impacts on water resource values.

Factor #2 - The Watershed Assessment Procedure

The IWAP guidebook states that the results of a level 1 analysis should be used to decide whether to undertake a level 2 or 3 analysis. Such additional assessment involves the collection of more detailed information on the ground and the development of recommendations for review by a roundtable. Once IWAP level 1 and, if required, level 2 analyses have been completed, interpretations and recommendations presented in the guidebook can be used.

The results of the IWAP level 1 analysis for the Little Cayuse Creek Watershed indicated that a level 2 or 3 assessment should be undertaken. The licensee did not undertake a level 2 or level 3 analysis despite the results of the IWAP level 1.

Even though the licensee did not complete a level 2 analysis for the Little Cayuse Creek watershed, the licensee inferred guidebook recommendations by using hazard indices determined by the level 1 analysis and assumed "worst case scenario" values that might result from a level 2 analysis (instead of actual level 2 results). Real level 1 values plus worst-case level 2 values allowed the licensee to select deliberately cautious recommendations for the watershed.

The logging of CP 355 contradicted a number of guidebook recommendations that logging should not occur, including:

- Do not allow additional harvesting above and around sensitive soils.
- Where the hazard index for peak flow is high, do not increase ECA (Equivalent Clear-cut Area, which provides a measure of how much of the watershed is exposed so as to shed water similar to a clear-cut).
- Reduce ECA over the entire watershed.
- Do not allow additional roads in sensitive areas.

The results of the level 1 analysis suggest that the watershed has been heavily impacted by previous forestry development. The complainant stated that the completed level 1 analysis provides the most recent assessment, so its recommendations should guide logging proposals. The complainant also stated that the IWAP methodology underestimates the severity of conditions in the watershed. The resulting recommendations were considered to provide minimum requirements to protect water resource values rather than worst-case maximum requirements.

Of particular concern to the complainant were the high ECAs for some of the sub-basins in the watershed. The technical committee split the watershed into three sub-basins for the level 1 analysis. The sub-basins were set to fully recognize the potential impact of logging at higher elevations. Prior to logging CP 355, the ECA was 39% for sub-basin 2 and 47% for sub-basin 3. Hydrologists generally agree that changes in the hydrological characteristics of watersheds often become evident at ECAs of 30%.

MELP and MoF agree that results of the IWAP need to be considered in any development proposal. However, they noted that IWAP guidebook recommendations are not definitive and are to be considered along with other available information. Both believe that the methodology used for the watershed assessments of Big and Little Cayuse watersheds was unnecessarily conservative. Recommendations inferred from the guidebook were therefore overly restrictive. For example, MELP stated that the sub-basin boundaries do not represent true hydrological units as per the procedure in the guidebook. MELP stated that the impact of logging at higher elevations is therefore more appropriately determined by considering the watershed as a whole. The ECA for the entire watershed was 22% prior to logging CP 355.

The investigation did not determine whether the results of the level 1 analysis underestimated (as asserted by the complainant) or overestimated (as asserted by the parties) the severity of conditions in the watershed. Such determination would not significantly affect the guidebook recommendations which state that further logging is inappropriate. Instead, the investigation focused on interpreting the guidebook recommendations based on the level 1 analysis as it was completed.

The guidebook provides guidance for interpreting recommendations developed from the level 1 and level 2 analysis. It states that:

> "It is rare that all resource activity would be restricted everywhere in the watershed, but that it is possible that in extremely sensitive, extremely damaged watersheds such restrictions would apply until restoration had occurred."

The guidebook states that level 1 and level 2 analyses should be viewed as a basis for discussion at the roundtable, not as firm requirements. Recommendations are for guidance only and can be overridden by a level 3 analysis or a decision by the roundtable. Neither happened in the circumstances.

The above does not suggest that the district manager can or should independently override the recommendations of the guidebook. However, the preface to the guidebook states:

> "The information provided in each guidebook is used to help users exercise their professional judgement in developing site-specific management strategies and prescriptions designed to accommodate resource management objectives....The examples provided in many guidebooks are not intended to be definitive and should not be interpreted as being the only acceptable option."

Guidebook processes and recommendations are not requirements. The Code gives district managers discretion to consider and implement alternative practices to those recommended in the guidebook. It was appropriate for the district manager to override the guidebook recommendations providing that the district manager had adequate reasons for doing so. Other information considered by the district manager is discussed in the following sections of the report.

Finding 4:

The guidebook recommended that, based on the results of the IWAP level 1 analysis, an IWAP level 2 or level 3 analysis be completed. This was not done and the watershed assessment was not completed. Logging of CP 355 also contradicted guidebook recommendations that logging be restricted or prohibited.

However, the IWAP guidebook procedures and recommendations are not firm requirements. It was appropriate for the district manager to override the process and recommendations of the guidebook providing that the district manager had adequate reasons for doing so.

Factor #3 - Other Field Based Studies

In deciding to approve CP 355, the district manager considered four assessments and reviews in addition to the IWAP level 1 analysis:

- a review by MoF regional staff
- a stream channel assessment
- a hydrologist's report
- terrain surveys

a) The review by Nelson Forest Region

After slides occurred in the watershed in 1993, the District requested that specialists from the Nelson Forest Region examine the impact of past and potential future logging on the watershed. The review identified risks associated with further logging, and provided over 40 recommendations to protect water resource values including recommendations regarding rate of cut, slope stability and soil erosion, and mountain pine beetle control. The review team (a

geomorphologist, engineer, entomologist and hydrologist) spent two days reviewing documents and two days on-site.

The review considered the Little Cayuse watershed as a whole. It did not subdivide the watershed into specific sub-basins as did the IWAP level 1 analysis.

The report from the review team stated:

> "Both creeks[2] are considered a class 3 watershed with recommended ECA[3] in the 20-30 percent range. Harvesting is to be balanced throughout the drainage.... When the percentage of harvesting occurring in each elevation band is reviewed, both drainages have elevation bands that have ECAs or proposed ECAs greater than 25 percent. Further investigation reveals that these areas are just above the snow line at peak runoff and can contribute significantly to the rising limb of the hydrograph. This contribution can bring about a greater peak flow and/or longer high flow period. The implications of these observations are greater sediment carrying capacity of the stream and destabilization of the stream channel. Little Cayuse has a history of stream bank destabilization as a result of logging and skidding down the creek channel. A consequence of this is that there exists in the channel historical sediment "wedges" (i.e., a build up of material behind logs and other debris creating a new stream bed). This material can be dislodged under unusually high flows and transported downstream causing sediment to appear at water intakes."

The review team concluded that:

> "The rate of cut is approaching a critical level in the Little Cayuse drainage given the inclusion of CP 359 and CP 355. No additional logging should take place. Continued harvesting under these existing permits should only occur once the recommendations in this report are addressed."

The team hydrologist and primary author of the report confirmed that, despite the risks identified, the review team supported further logging in Little Cayuse watershed under CP 359 and CP 355 provided that the recommendations of the report were followed. One of the recommendations was that the total ECA for Little Cayuse watershed not exceed 30%.[4]

The district manager responded to the recommendations in 1993 by suspending logging activities in Little Cayuse Creek watershed, other than minor salvage of wind-thrown timber on existing cutting authorities, until the licensee implemented the recommendations of the review team. In response, the licensee undertook rehabilitation measures and assessments described later in this report.

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2 Little Cayuse Creek and Cayuse Creek

3 ECA provides a measure of how much of the watershed has hydrological characteristics similar to a clear-cut.

4 Total ECA for the Little Cayuse Watershed with the inclusion of CP 355 as per the 1997-2001 FDP (86 hectares) will not exceed 27%.

The licensee's position was that the recommendations of the review by Nelson Forest Region had been substantially implemented. The district concurred. The licensee acknowledged that it had not implemented recommendations regarding seasonal restrictions for logging and "beetle proofing" by thinning from below, but had provided a rationale for not implementing those recommendations.

The complainant acknowledged that the licensee had implemented many recommendations; however, the complainant asserted that some recommendations (regarding seasonal restrictions on logging, maintaining canopy while salvaging, road construction and deactivation practices to minimize erosion, reviewing drainage adequacy immediately following significant rainfall events, and use of cable systems on sensitive sites) have not been adequately implemented. The complainant twice asked the regional review team to determine the extent to which recommendations had been implemented. That never occurred.

The Board finds that the licensee had implemented most, but not all, of the recommendations of the review by the Nelson Forest Region. The recommendations that had not been implemented (seasonal restrictions on logging and thinning from below) are not expected to prevent the adequate management and conservation of the forest resource. Furthermore, the Board found no evidence that the implementation of other recommendations was inadequate.

Finding 5:

The licensee has implemented most of the recommendations of the review by the Nelson Forest Region. Recommendations that were not implemented are not expected to prevent the adequate management and conservation of the forest resource. The licensee's actions have adequately addressed the concerns identified by the Nelson Forest Region. The district manager's approval of CP 355 was consistent with the recommendations from the Nelson Forest Region that development could proceed after recommendations were first implemented.

b) Stream channel assessment

In response to the 1993 recommendations by the Nelson Forest Region, the licensee inventoried stream reaches and evaluated channel stability to develop a management strategy. These studies were undertaken in 1995, prior to the development of the Channel Assessment Procedure (CAP) guidebook (IWAP level 2). The consultant therefore developed his own methodology for evaluating channel stability. The study identified disturbed channels and their susceptibility to mass wasting and sedimentation, as does the current CAP. The report identified numerous debris jams and accumulations of woody material occurring throughout the entire length of Little Cayuse's mainstem. This suggests that Little Cayuse Creek may be sensitive to increased peakflow.

The report did not produce hazard indices for stream channel stability needed to complete the watershed assessment procedure and develop operational recommendations as suggested in the guidebook. While the 1995 study provides information similar to the CAP, the results are not as useful as the results of an assessment using the current procedure. It simply identified areas of concern that were considered by the district manager and MELP when reviewing the proposal (discussed later in the report).

c) Consulting hydrologist's report

In response to mass failures that occurred in the watershed in 1993, the residents' committee hired a hydrologist to examine impacts of past and future logging on the watershed. The hydrologist spent one day in the field, which did not allow for a complete and thorough analysis of the watershed. The resulting report recommended no further development until the watershed had stabilized and an aggressive road rehabilitation program was completed. While the recommendations must be considered, they must be considered in light of the more comprehensive study undertaken in 1993 by the Nelson Forest Region.

d) Terrain surveys

In 1995 and 1996 the licensee completed terrain surveys to map and interpret areas prone to landslide and erosion hazard. These allowed forest planners to anticipate and avoid those areas where logging or road building could cause unacceptable environmental damage. Surveys followed standard procedures from the *Mapping and Assessing Terrain Stability Guidebook*, April 1995.

These studies provided detailed terrain stability maps that indicated that both of the blocks in CP 355 had a high sediment yield hazard but a low mass wasting hazard. The terrain surveys did not, and were not intended to, provide recommendations regarding the appropriateness of logging. They simply identified concerns that were considered by the licensee and MoF when developing and reviewing the silviculture prescriptions (discussed later in the report).

Finding 6:

In addition to the IWAP level 1 analysis, the district manager considered field-based information provided by MoF regional staff, the stream channel assessment, the hydrologist's report, and terrain surveys in his decision to approve the development of CP 355.

Factor #4 - Measures to Mitigate the Impact of Logging

In deciding to approve CP 355, the district manager considered actions undertaken or proposed by the licensee to mitigate the impact of logging.

a) Road maintenance and deactivation

The 1993 review concluded that road construction and drainage structures were substandard and that a road maintenance and deactivation program was a priority. The licensee subsequently completed an inventory of roads and drainage structures and submitted a road maintenance and deactivation plan in January 1995. Additional prescriptions for old overgrown roads were submitted in February 1997. The licensee deactivated approximately 34 kilometers of roads between 1994 and 1997 before the approval of CP 355. The final 8 kilometres of road were deactivated during the summer of 1998.

b) Provisions in the Silviculture Prescriptions

The licensee stated that the silviculture prescriptions contained a number of provisions that exceeded the standard operating procedures used to ensure adequate management and conservation of the forest resource. These included maintaining forest cover, cable yarding part of Block 1 and committing to prompt, permanent road deactivation. The prescriptions stated that the licensee would use suitable harvesting and deactivation measures to address the high sediment yield hazard as identified by the terrain surveys.

The licensee also submitted a drainage plan with the prescriptions to ensure that logging maintained the natural drainage patterns and did not concentrate or redirect water. The drainage plan mapped all surface sources of water and prescribed drainage structures.

The district manager stated in an October 28, 1997 letter to the complainant that he was satisfied that the provisions in the silviculture prescriptions would substantially reduce the risk of soil erosion and/or sediment movement identified by the terrain surveys. These provisions included the use of low ground pressure skidders, prompt road deactivation, re-establishment of natural drainage patterns and prompt re-seeding of any exposed mineral soil within the right of ways. The MoF district soil scientist had reviewed the prescriptions and was satisfied that the soil resources would not be detrimentally affected by the prescribed logging methods. With regard to the high mass hazard along portions of Little Cayuse Creek, the district manager stated that logging of CP 355 is unlikely to contribute sediment to Little Cayuse Creek since it is located approximately 500m away.

The district manager's letter also stated that logging in winter when the ground was frozen would further reduce risks. Logging of CP 355 was completed mostly in winter but stopped at spring breakup. Contrary to the district manager's commitment to winter logging, harvesting of Block 2 was completed in summer. The silviculture prescription states that both summer and winter logging are acceptable. The Board finds that the district manager made the commitment to harvest in winter in good faith.

The Board accepts that the practices outlined in the prescriptions will mitigate the risks to water resource values identified by the channel assessment and the terrain surveys. However, logging has a cumulative impact on hydrological values within a watershed. Increasing total disturbance will inevitably increase the potential risk to water resource values, even where suitable logging practices are employed.

Finding 7:

The plans for CP 355 included provisions that addressed concerns identified by the field-based studies. These provisions mitigated the increased risk to water resource values that will result from logging.

Factor #5 - Other Considerations

The district manager, in deciding to approve CP 355, also considered timber salvage due to mountain pine beetle damage and the landslide history in the watershed.

The complainant asserted that control of mountain pine beetle and the salvage of beetle-killed timber was driving development of the watershed. The complainant asserted that MoF could not or would not stop development of CP 355 because they had directed the licensee to address the beetle problem and that logging of CP 355 therefore proceeded regardless of the impact on water resource values.

In 1991, MoF directed the licensee to address beetle investigations or risk penalties being invoked under the Forest Act. However, MoF changed its position after the 1993 review by Nelson Forest region stated that logging would not provide for effective control. In a 1993 letter to the regional manager, the district manager (of that time) stated:

> "Although these drainages have been and continue to be heavily impacted by mountain pine beetle, future harvesting activities will only be conducted when it can be demonstrated that the impact to the water resource will be negligible."

Beetle control and salvage of timber continued to be a consideration after 1993. The salvage of dead and dying timber was a priority in the licensee's management and working plan as well as a condition of its licence. The current district manager stated in a letter to the complainant that the rationale for approving CP 355 "...has been to address a serious health problem which has affected large areas of valuable forest; loss of government revenues... while taking into account other resource values...." However, timber salvage was just one of many considerations in the district manager's decision. Although beetle control in the Little Cayuse watershed was a priority for MoF prior to 1993, the Board found no evidence that the control of mountain pine beetle or the salvage of timber was given undue consideration in the decision to approve plans for CP 355 in 1998.

Finding 8:

The district manager did not give undue consideration to the control of mountain pine beetle or the salvage of beetle-killed timber in his decision to approve plans for CP 355.

The complainant asserted that the history of landslides in the watershed reflects a detrimental impact from past logging and indicates that further logging is inappropriate.

A geoscientist attributed the 1993 landslide to logging and road maintenance activities. Despite road deactivation and maintenance measures intended to mitigate the impact of past logging, another slide occurred in 1997. An assessment of the 1997 slide determined that it was caused primarily by high meltwater runoff and heavy precipitation, but that the diversion of excess drainage along an old skid trail was a contributing factor. The licensee immediately implemented additional recommendations to stabilize the slide site.

The district manager considered the recent landslide to be a significant event, but disagreed that it indicated that the risk of further development to water resource values was unacceptable.

The Board finds that the occurrence of a trail-related landslide even after road deactivation measures were undertaken illustrates an inherent risk from development; that risk must be considered. However, the landslides do not necessarily demonstrate that the current level of risk is excessive or that further logging is inappropriate. Assessment of risk requires that all factors and available information be taken into consideration.

Finding 9:

Logging of the watershed entails risk of environmental damage, as indicated by previous landslides. However, the landslides do not necessarily indicate that the current level of risk is unacceptable or that further logging is inappropriate.

Factor #6 - Recommendations from MELP

The district manager stated that the advice of MELP's water management staff was a key consideration in whether or not to approve the logging of CP 355 without additional study. MELP based its advice on a review of the CP 355 proposal, an aerial reconnaissance, walking the lower reaches and driving the main roads, plus general experience in the area. MELP provided comments to MoF in an April 15, 1997 letter:

> "Water Management is not opposed to the development of CP 355 provided all the recommendations in the Cayuse Creek Regional Review (August 9, 1993) have been addressed. It is recognized that Pope & Talbot Ltd. has focused considerable resources to alleviate road-related problems over the last years. Review of the Equivalent Clear-cut Area calculations for the entire drainage indicate the current level of cut is 22% (IWAP, 97/01/31). Incorporating development of CP 355, the ECA level (weighted by H605 line) is still within the recommended acceptable limit set by the Regional Review

5 The H60 line is the elevation for which 60% of the watershed area is above.

> Team. Please note there is an expectation from this office that any additional development after CP 355 which further increases ECA levels will be preceded by more detailed analysis of the watershed conditions.
>
> Opportunities for future development after CP 348 & 355 in Little Cayuse and Cayuse creeks should be identified by an IWAP Level 3 analysis. Both creeks have a history of stream bank destabilization from logging in and about the stream channel. As a consequence there exists excessive sediment production in the watershed due to reworking of previously deposited debris along unstable or disturbed reaches. Any additional development which occurs above 1250m (H60 line) in the drainage may have a greater impact and is, therefore, of most concern. The implications are increased potential for sediment transport capacity to water intakes and fisheries habitat downstream.
>
> The sensitivity of the drainage network to additional development needs to be better understood. As such, an IWAP level 3 should be undertaken to clarify the potential for forestry activities to alter sediment transport in the drainage prior to additional forest development."

The complainant regarded the combination of not opposing CP 355 but strongly recommending additional study before any further logging as arbitrary or even contradictory. Why was the threshold set <u>after</u> CP 355, not before? The complainant stated that MELP's recommendations highlight the risk and uncertainty associated with development, proving that more study was needed. Consequently, the complainant believed that MELP's decision to not oppose CP 355 was inappropriate.

MELP maintains that it did not oppose the logging of CP 355 on the basis of the <u>incremental</u> risk to water resource values; MELP judged the incremental risk to be low. This was because the licensee had mitigated several of the potential hazards identified by the IWAP. MELP considers that the three most influential factors in increasing peak flows are Equivalent Clear-cut Area, road density and soil compaction. MELP's opinion is that the licensee had addressed the latter two through the permanent deactivation of access structures plus the use of low ground pressure machinery. As for the Equivalent Clear-cut Area, it still remained below the acceptable limit set by the MoF regional review team, with the inclusion of the two CP 355 cutblocks.

On the other hand, MELP anticipated that any further logging *<u>after</u>* CP 355 would increase ECA to levels where increases in peak flow become detectable. Furthermore, the additional logging being considered by the licensee would require more roads and operation on potentially unstable terrain above the creek. Those additional hazards would require additional study. In summary, MELP's opinion was that there was enough certainty regarding the potential impact of CP 355 to not oppose it, but not enough certainty regarding the potential impact of additional future development.

The Board accepts MELP's explanation as sound; it is neither contradictory nor arbitrary. However, MELP does not explain its full rationale in its letter to MoF. The letter therefore led the complainant to conclude that logging CP 355 posed unacceptable risks to water resources. Not opposing logging of CP 355, yet strongly recommending further study

thereafter, does not, without a clearly communicated explanation, inspire public confidence that the water resource is being adequately managed and conserved.

The Board notes that MELP was not the statutory decision maker in this matter and was not obligated to communicate its rationale to the complainant. MELP stated that its letter did not contain a full rationale as it was addressed to MoF staff familiar with studies and discussions that preceded the letter.

Finding 10:

MELP's rationale for not opposing the harvesting of CP 355, but recommending that additional study be undertaken prior to considering any further development, was sound. MELP's letter did not fully explain this rationale, as it was directed to MoF rather than the complainant.

Factor #7 - The Potential Benefit of Further Study

To evaluate the district manager's decision to approve operational plans without further study, the Board considered whether the results of further study would have appreciably improved the decision making process. Specifically, could an IWAP level 3 have resolved whether further logging was appropriate? MELP recommended that an IWAP level 3 analysis be completed prior to considering any development after CP 355. The terms of reference for the level 3 analysis suggested that additional study could clearly identify development opportunities for the watershed:

> "The IWAP Level 3 is to provide answers to the questions that have arisen in the review of the harvesting plans of the licensee. The report is to provide clear recommendations on the road building and harvesting plans proposed by the licensee. It should also point out opportunities for further developmer ... It is to provide recommendations on a block by block basis.... The report is to be definitive in its recommendations. It should not simply recommend further study. This should be the final study of the issue of reviewing and assessing a development plan."

MoF had different expectations. Its opinion was that further study would not likely have resolved whether the logging of CP 355 was appropriate. However, all parties agree that further study would have been desirable, as it would—at a minimum—have provided additional information for decisions by adding another professional opinion. MoF stated that additional information is always useful, but at some point the statutory decision-maker must decide whether there is enough information to make a decision. MoF maintains that, in the case of CP 355, sufficient information to make a decision was already available through other sources.

The Board agrees that further study would have provided additional information that would assist decision-making. However, it is unlikely that additional information would have resolved the issue of whether additional logging should occur. Even if a study provided recommendations regarding the appropriateness of further development, the district manager would have needed to consider that opinion along with other available information. The district manager already had sufficient information with which to make a decision.

Finding 11:

Additional study would have provided information to assist with development of a management strategy for the watershed, but would not have definitively resolved whether logging of CP 355 should occur. Sufficient information was already available for the district manager to decide on the proposed logging of CP 355.

Fairness of Processes

The district manager had the authority to require a watershed assessment prior to approving operational plans for Little Cayuse Creek; he decided not to require an assessment. Did the district manager use a fair process in making that decision?

As with the evaluation of discretionary decisions, the Board's test for fair process is not a strict legal test. Instead, the Board applies standards that reflect general public expectations and uses the ordinary meaning of words. A fair process may require an opportunity for the affected public to provide input into the process. It may also require that, for significant decisions, the decision maker explain a decision to affected parties in a timely manner.

In this case, meetings of the technical committee provided a regular process for the complainant, government agencies and the licensee to discuss concerns. The district manager and the complainant also met on two other occasions to discuss concerns: once in the district office and once at the complainant's home. The first meeting occurred before the district manager finalized his decision, suggesting that he considered the complainant's position. Also, informal discussions between the complainant and parties were ongoing throughout the process.

The complainant stated that the opportunities for input into the development of CP 355 were more restricted than with past logging. For example, the complainant was given copies of the silviculture prescriptions to review only after the licensee had submitted them. In the past the residents' committee was given a more active role in the development stage. The complainant was also not invited to attend the 1997 field review for the silviculture prescription. The complainant stated that this reduced involvement also contravened the terms of reference for the technical committee.

The Code does not envision routine direct public participation in the development of silviculture prescriptions. Instead, unless the district manager orders otherwise, it restricts

public participation to the review of forest development plans. The Board therefore finds that the complainant had more involvement than the minimum anticipated in the legislation.

The Board also finds that the technical committee's exclusion from the development of the silviculture prescription was consistent with its terms of reference. The terms of reference provide for the technical committee to recommend objectives for the plan area, and review proposals at least 45 days before they are approved. In this case, the technical committee had six months to review CP 355 before it was approved. The terms of reference do not call for direct participation in the development of proposals.

The complainant was provided with adequate opportunity to provide input into the decision-making process through the technical committee, ongoing discussions with MoF and licensee staff, and meetings with the district manager. Opportunities to provide input exceeded the standards normally required for a fair process. The district manager's attempts to resolve concerns through direct meetings, including a meeting at the complainant's home, were commendable.

Finding 12:

The complainant's opportunity to provide input into the decision-making process was adequate and exceeded the standards normally required for a fair process. The complainant's involvement exceeded the minimum anticipated in the legislation and was consistent with the terms of reference for the technical committee. The district manager's attempts to resolve concerns through direct meetings, including a meeting at the complainant's home, were commendable.

The complainant expressed concerns with logging in the Little Cayuse Creek watershed in letters to the district manager on March 24 and September 9, 1997. In response, the district manager met with the complainant (as discussed in the previous section). The complainant stated that during those meetings he did not receive a satisfactory answer as to why further assessments were not completed. Consequently, the complainant wrote another letter to the district manager on September 9, 1997 stating:

> "As a spokesperson for the CCWC, I need a written explanation of why, after completing a level 1 IWAP, the procedure requiring a level 2 and/or level 3 was not carried out…Twice, once in June, 1997, in a meeting with you in your office, and secondly in August when you came to my home, you promised me that you would give me written answer to this question. As well, you said you would answer all other questions and respond to comments that I submitted prior to the approval of CP 355."

The district manager stated that the reasons for not undertaking further study were discussed or implied during various meetings and ongoing discussions with the complainant. The district manager and the complainant disagreed on this point. The investigation did not attempt to verify what transpired during the meetings. However, the complainant's later

request for a written rationale indicated that the meetings did not resolve this concern to his satisfaction.

The district manager responded to all three letters on October 28, 1997. The district manager responded to each of the points raised. However, regarding the issue of further assessments, the district manager replied:

> "In answer to your letter dated September 9, 1997, in which you asked why after completing the IWAP level 1, the procedure requiring a Level 2 and/or a level 3 has not been done - Pope and Talbot Ltd. is now in the process of completing the field work that is equivalent to a level 3 in *Big* Cayuse Creek. The results of these assessments should be available next year" (emphasis added).

This response does not explain why an IWAP level 2 or 3 was not done in Little Cayuse Creek watershed, contrary to the recommendations of the IWAP level 1 analysis. Instead, the district manager referred to studies in Big Cayuse Creek watershed. The complainant received no formal explanation to his primary concern of why further study was not done in the Little Cayuse watershed.

The complainant was also dissatisfied with the length of time MoF took to respond to his written concerns. The district manager took over seven months to formally respond to the complainant's first letter. The Board considers such a delay to be inappropriate in the circumstances. However, the district manager did meet with the complainant after receiving the first letter and thereby responded, at least verbally, to the complainant's communication.

Finding 13:

The district manager considered and generally responded to the concerns raised by the complainant and responded through direct meetings and in writing. However, the district manager's written response did not address the complainant's primary concern about the absence of a level 2 or level 3 assessment. Furthermore, the written response to the first two letters was not timely.

Conclusions

1. The Code did not require a watershed assessment for the completion of the forest development plan or the silviculture prescriptions for TFL 23's CP 355. The district manager's approval of the operational plans complied with the Code.

2. The district manager's decision to not require further assessments prior to approving operational plans for CP 355 was reasonable. Available studies and assessments provided enough reliable information to make decisions for the management of the watershed.

3. The district manager's conclusion that the logging of CP 355 would not interfere with the adequate management and conservation of the forest resource was reasonable. Logging was consistent with the recommendations of MELP and the review by the Nelson Forest Region. Furthermore, watershed rehabilitation measures and logging practices had been carried out that reduced the risks identified by the various studies and reviews.

4. The complainant had adequate opportunity to provide input to the decision making process. The Board commends the district manager's efforts to resolve concerns through direct meetings with the complainant.

5. The district manager generally addressed the written concerns of the complainant through his written response. The district manager's response indicates that he considered the complainant's concerns in the decision making process. However, the district manager's written response was not timely and did not answer the complainant's primary concern of why he did not require a level 2 or level 3 assessment.

The Board concludes that the complainant's concern was understandable given the impression created by the combined effects of:

- the results of the IWAP level 1 analysis,
- MELP's strong recommendations for further study after CP 355, and
- the district manager's failure to explain in writing why he did not require further study.

However, after consideration of all the evidence, the Board concludes that the approval of two cutblocks in CP 355 in the Little Cayuse Creek watershed without a level 2 watershed assessment did comply with Code requirements and was based on consideration of sufficient information. The district manager considered the complainant's concerns in the decision-making process. The district manager's decision did provide for adequate management and conservation of forest resources, including the water resource. His letter of October 28, 1997 did not convey the reasons for his decision to the complainant, who had an interest in the watershed. It is the opinion of the Board that it was important that he do so.

Recommendations

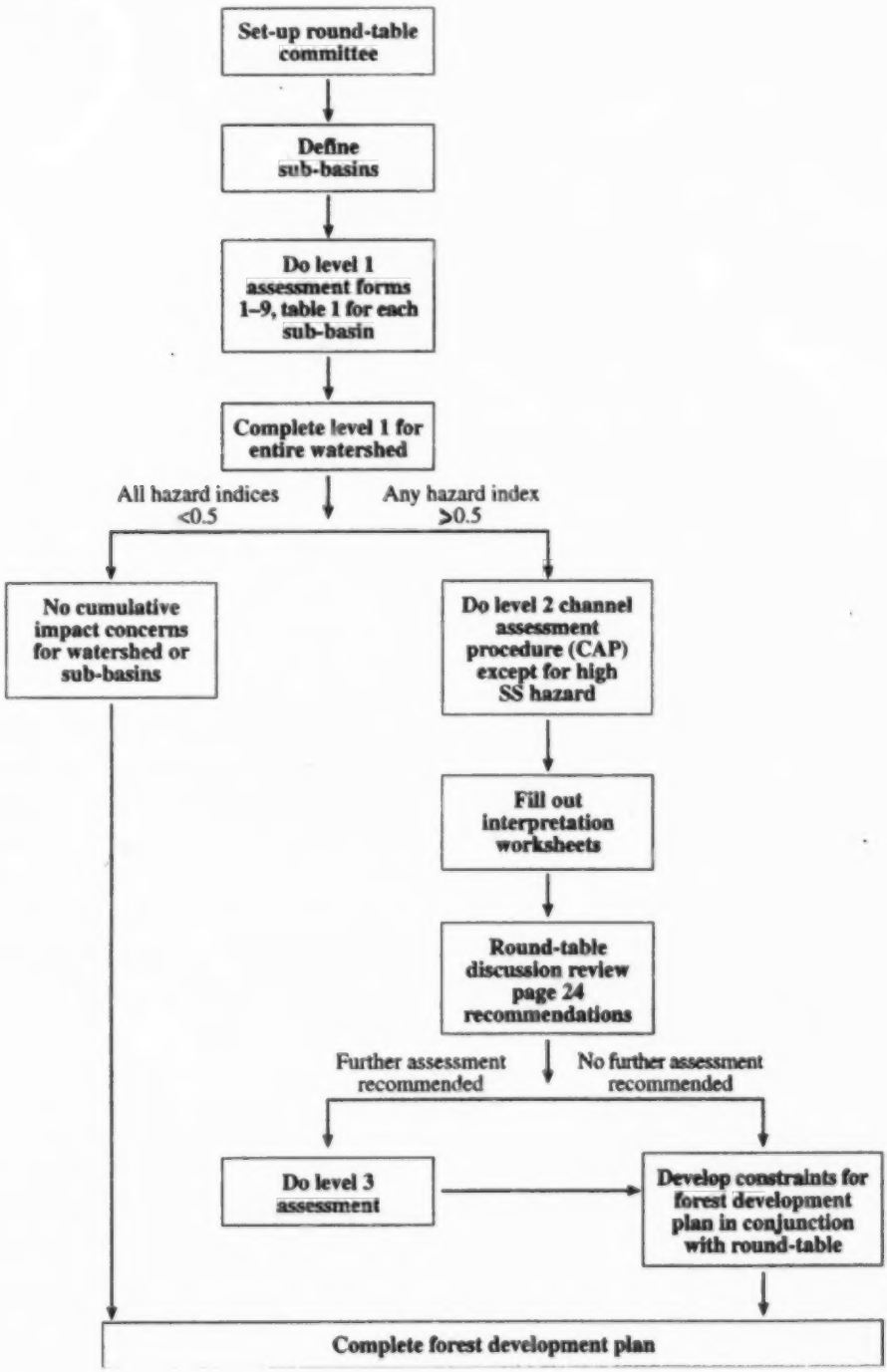
As a result of this complaint investigation, the Board makes the following recommendations:

1. Statutory decision-makers should be encouraged to communicate directly with parties who are affected by decisions and who have expressed concerns. Direct communication is an appropriate way to provide a reason for a decision. When direct communication does not resolve the concern, or when a member of the public requests a written explanation, statutory decision-makers should provide written reasons.

2. Written responses to requests for reasons for decisions should be timely and should clearly address the concerns raised by the concerned member of the public.

Appendix 1

Relationship between the different analysis levels for the Watershed Assessment Procedures (taken from the *Interior Watershed Assessment Procedure Guidebook (IWAP) - Level 1 Analysis*, September 1995):


Set-up round-table committee
Define sub-basins
Do level 1 assessment forms 1–9, table 1 for each sub-basin
Complete level 1 for entire watershed
All hazard indices <0.5
Any hazard index >0.5
No cumulative impact concerns for watershed or sub-basins
Do level 2 channel assessment procedure (CAP) except for high SS hazard
Fill out interpretation worksheets
Round-table discussion review page 24 recommendations
Further assessment recommended
No further assessment recommended
Do level 3 assessment
Develop constraints for forest development plan in conjunction with round-table
Complete forest development plan